

## ACRONYMS

ARCross	American Red Cross
CDP	Census Designated Place
DMA 2000	Disaster Mitigation Act of 2000
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Maps
NOAA	National Oceanic and Atmospheric Administration
NCDC	National Climatic Data Center
NRCS	Natural Resource Conservation Service
NRVPDC	New River Valley Planning District Commission
NWS	National Weather Service
SAME	Specific Area Message Encoder
TEA-21	Transportation Enhancement Act
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USGS	United States Geological Survey
VDEM	Virginia Department of Emergency Management

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## APPENDIX A

### MITIGATION ASSISTANCE: FEMA and other Federal Assistance Available

While the Federal Emergency Management Agency (FEMA) has the most prominent role in hazard mitigation, other federal agencies also offer related assistance in mitigation and recovery. These roles may be redefined as a result of the recent creation of the new Department of Homeland Security, of which FEMA will be a part. Nonetheless, the next section briefly describes federal mitigation assistance as it is currently understood.

*(See Appendix for FEMA and Federal Partners and National Drought Assistance and State Agency assistance.)*

FEMA provides a wide range of resource for mitigation effort, including technical resources and publications, public outreach tools, as well as mitigation funding to states and ultimately localities. Since flooding has been the most dominant, widespread, and expensive hazard, most resources have gone to this effort. Within FEMA, Flood Insurance and Mitigation Activities (FIMA) “provides citizens protection with flood insurance, prevention with mitigation measures and partnerships with communities throughout the country” (from <http://www.fema.gov/fima/>). Technical activities and resources include floodplain mapping and management. The next two pages give some detail on relevant FEMA programs which provide technical assistance, regulatory standards and financial assistance.

## **Federal Emergency Management Agency (FEMA) Programs**

*Additional information is available online at [www.fema.gov](http://www.fema.gov). Some programs are activated only after a disaster is declared; others are continuous:*

■ **Hazard Mitigation Grant Program (HMGP).** The HMGP has become the most widely known grant program that provides grant funding to address at-risk development. While the program's primary emphasis has been to remove homes through acquisition or to elevate them above predicted flood levels, HMGP funds have also been used on a wide variety of projects to increase resistance to nearly all natural hazards. Funds for this program become available only after a disaster declaration; recipients must meet certain eligibility criteria; projects must also be feasible and cost effective.

■ **Response & Recovery – Public Assistance (PA).**

Immediately following the declaration of a major disaster, FEMA and the state implement procedures to assess damage, to estimate the cost of restoration, and to allocate funds for recovery. The Public Assistance program focuses on restoration of certain non-profit and public buildings, public utility and transportation infrastructure and covers a portion of the costs to respond to and recover from the event. Under certain circumstances, mitigation measures can be factored into recovery of public buildings and facilities in order to minimize the potential for future losses from comparable events. The Virginia Department of Emergency Management VDEM is responsible for coordinating response and recovery efforts with FEMA and local jurisdictions.

■ **Response & Recovery – Individual Assistance (IA).** Also implemented jointly immediately following a major disaster declaration for events that impact citizens, the IA program provides funds for temporary housing, basic housing repairs, and replacement of essential household items.

■ **Pre-Disaster Mitigation.** The pre-disaster mitigation program operates on a common-sense, damage-reduction approach, basing its work and planning on three simple principles: (1) preventive actions must be decided at the local level; (2) private sector participation is vital; and (3) long-term efforts and investments in prevention measures are essential. Application is made through VDEM.

■ **Flood Mitigation Assistance Program (FMAP).** This grant program is intentionally focused on those properties that, if mitigated, will benefit to the National Flood Insurance Program and its policyholders. For the most part, the projects acquire, elevate or relocate residential buildings that have a history of repetitive claims against the NFIP. All projects, including measures other than acquisition and elevation, must be cost effective and not have adverse environmental impacts.

■ **National Flood Insurance Program (NFIP).** The NFIP offers flood insurance to residents who reside in local jurisdictions that adopt and enforce certain provisions that will help to minimize future flood losses. The measures apply to all activities proposed within special flood hazard areas that are designated on maps provided by FEMA. All development must be designed and constructed to withstand damage (from water and windrelated hazards) and must not create any adverse impacts on other properties. The single most effective measure (other than build away from flood-prone areas) is to elevate buildings above the base flood elevation.

### **Federal Emergency Management Agency (FEMA) Programs continued**

■ **Flood Hazard Map Program.** As part of the NFIP, FEMA oversees the development of flood hazard maps. These Flood Insurance Rate Maps (FIRM) are used by local jurisdictions to regulate development. Projects intended to reduce flood damage generally are designed using the flood hazard information shown on the maps and contained in accompanying engineering studies. Although nearly all flood-prone communities in the nation have been mapped, FEMA has a significant backlog of revisions and updates that need to be performed on an ongoing basis. The responsible Virginia agency is the Department of Conservation and Recreation (DCR).

■ **Community Rating System (CRS).** The CRS is an incentive program that rewards communities that exceed NFIP regulations in ways that reduce damage and improve safety. The incentive is a reduction in the cost of flood insurance premiums. Communities must apply, annually certify their programs, and undergo periodic audits. In Virginia, 17 communities participate and provide discounts to their residents of 5% to 10% (as of 12/2000).

■ **National Hurricane Program.** FEMA funding is provided to hurricane-prone states to establish, enhance and maintain basic levels of preparedness and mitigation capabilities, to promote effective mitigation measures, to conduct hazard identification and evacuation studies, to conduct post-storm analyses of mitigation measures, to conduct training, and to promote public awareness and education of hurricane safety and preparedness.

■ **National Dam Safety Program.** FEMA coordinates the National Dam Safety Program among federal agencies and provides training and funds. Virginia's participation is coordinated by DCR.

■ **Hazards U.S. (HAZUS).** HAZUS is a computer program that utilizes a set of Geographic Information System (GIS)-based mapping tools that can help to estimate losses associated with earthquakes, floods, and wind. Developed state partners. In addition to maintaining a dam inventory, encouraging research, and promoting the implementation of state programs, the program also in partnership with the National Institutes for Building Safety, HAZUS can be used to model event scenarios that are useful to compare risks between regions as well as to evaluate the effects of certain mitigation measures. Each state receives a copy of the software and certain baseline data. Recent improvements have been made in the quality of data that characterize building types and locations, significantly improving the analysis results.

■ **Environmental and Historic Preservation and Cultural Resources Program** is to address the needs of communities in preparing for, mitigating, responding and recovering from the devastating effects disasters may have on historic properties and cultural resources while meeting FEMA's primary mission of reducing the loss of life and property to all types of hazards.

Other federal agencies that have important mitigation-related roles include the Department of Housing and Urban Development, the Economic Development Administration, the US Army Corps of Engineers, and the Department of Agriculture. The relevant programs are detailed below.

## **Federal Agency Mitigation-Related Programs:**

**U.S. Department of Housing and Urban Development (HUD).** HUD programs are administered through the Virginia Department of Housing and Community Development and offer several programs that support local efforts to address hazards and to implement mitigation measures. The following are some of the more active programs used to minimize flood hazards:

- **Community Development Block Grant (CDBG).** CDBG funds are available to support activities that meet one of the three National Objectives criteria established by HUD:
  - benefit low and moderate income persons;
  - prevent or eliminate slum and blight conditions; or
  - meet other community development needs having a particularly urgency because existing conditions pose a serious and immediate threat to the health and welfare of the community, and where other financial resources are not available.
- **HOME Housing Partnerships Program.** HOME program funds give communities the flexibility to undertake a broad range of affordable housing activities, including the acquisition of property, construction of new housing for rent or homeownership, rehabilitation of rental or owner-occupied housing, improvement of sites or demolition of dilapidated homes, relocation costs for households displaced by HOME program activities, financial assistance to low-income homeowners and new homebuyers, and tenant-based rental assistance for low-income renters. The Virginia Department of Housing and Community Development coordinates the HOME program.

**U.S. Department of Commerce, Economic Development Administration (EDA).** EDA supports economic recovery strategies, in part by providing cost-shared funds for planning and technical assistance, emergency infrastructure grants, construction grants and a Revolving Loan Fund to assist communities and quasi-public entities such as local development corporations and public or private non-profit organizations. EDA funds have been used to retrofit or relocate public water supply or wastewater treatment facilities. After disasters, some communities use EDA long-term recovery funding to help businesses move to safer locations.



## **Federal Agency Mitigation-Related Programs continued**

**U.S. Army Corps of Engineers.** In addition to managing several large dams, levee protection projects and beach nourishment projects, the Corps supports state and local floodplain management and mitigation through the following:

- **Floodplain Management Services (FPMS).** Under FPMS, the Corps provides a full range of technical services and planning guidance support for state and local efforts. The same services are available to non-governmental entities, including individuals, on a reimbursable basis. The Corps can provide information on flooding, estimates of potential flood losses, and guidance for managing flood hazard areas. Under FPMS, the Corps investigates methods to prevent and reduce flood damage, including retrofit and other flood proofing methods.
- **Planning Assistance to States (Section 22).** Assistance and planning guidance to state, regional and local governments is provided on a cost-shared basis and can address a variety of water resources issues, including floodplain management, flood damage reduction, dam safety, water supply, water quality, wetlands management and environmental conservation and preservation.

**U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS).** The NRCS is dedicated to the conservation of soil and water and related resources. Technical assistance is provided to individuals, groups, organizations and government agencies through conservation districts. Virginia's Departments of Agriculture and Consumer Services and Conservation and Recreation are the state's contacts for NRCS programs:

- Under authority in Public Law 566, numerous flood reduction projects have been built to address problems in small watersheds. NRCS supports river basin and watershed planning initiatives undertaken by local jurisdictions.
- The Emergency Watershed Protection Program can provide technical and financial assistance to communities to repair and restore clogged and damaged waterways to pre-disaster conditions.
- The Emergency Conservation Program, coordinated with the USDA Farm Services Agency, provides technical assistance to the agricultural community after disasters.
- Wetland Reserve Program provides technical and financial support to help landowners implement wetland restoration, conservation and wildlife practices.

## **Federal Agency Mitigation-Related Programs continued**

**U.S. Department of Agriculture, Other Programs.** USDA has a number of loan and grant programs that may support mitigation initiatives and post-disaster recovery:

- Rural Business-Cooperative Development Service Business and Industrial Loans help create jobs and stimulate rural economies by backing rural businesses.
- Rural Housing Service Community Facilities Loans and Grants can be used to construct, enlarge or improve community services for health care, public safety, and public services.
- Water and Waste Grants and Loans are used to develop, replace, or repair water and waste disposal (including storm drainage) systems in rural areas and small towns.
- Farm Service Agency Emergency Conservation Program assistance can be used to rehabilitate certain farmland damaged by floods or other disasters.
- Farm Service Agency Tree Assistance provides cost-shared payments to orchardists, maple sugar producers, greenhouse operators and vineyard growers who incur losses due to damaging weather.
- Federal Multi-Peril Crop Insurance policies insure against losses due to natural causes such as drought, excessive moisture, hail, wind, frost, insects and disease.
- Non-insured Crop Disaster Assistance Program helps growers of crops for which crop insurance is not available.
- Farm Service Agency Flood Risk Reduction allows farmers to voluntarily enter into contracts to receive payments on lands with high flood potential in return for foregoing certain USDA program benefits.
- Conservation Reserve Program helps landowners conserve and improve soil, water and wildlife resources by converting environmentally sensitive acreage to long-term, approved cover.
- Emergency Conserve Program provides funding to address new conservation problems created by disaster that, if not treated, would impair or endanger the land. Funds can be used to rehabilitate farmland damaged by wind erosion, floods, hurricanes, or other natural disasters and to carry out water conservation measures during drought.

## **Federal Agency Mitigation-Related Programs continued**

**Small Business Administration (SBA).** The SBA has the authority to declare disaster areas based on the number of homes and businesses that are affected, even if the event does not warrant a declaration by the President. SBA provides low-interest loans, and can authorize loan amounts up to 20% above the costs of restoration if the applicant agrees to implement mitigation measures. Individuals and businesses can use SBA funds to pay for the non-federal share of HMGP and FMA projects to elevate-in-place, relocate, or floodproof buildings in flood hazard areas.

- **SBA Business Physical Damage Loan Program.** Available to help businesses and nonprofit organizations repair or replace uninsured damaged property such as real estate, machinery and equipment, inventory, and supplies. SBA requires borrowers to obtain and maintain appropriate insurance, especially if located in a flood hazard area.
- **SBA Economic Injury Disaster Loan.** These loans of “last resort” provide working capital to small businesses and small agricultural cooperatives to help them through the recovery period.

**U.S. Fire Administration Firefighters Grant Program.** This is a competitive grant program which addressing firefighting needs.  
([www.usfa.fema.gov/dhtml/inside-usfa/03wrkshps.cfm](http://www.usfa.fema.gov/dhtml/inside-usfa/03wrkshps.cfm))

**US Geological Survey (USGS).** Their activities in the hazards theme area deal with describing, documenting, and understanding natural hazards and their risks. These activities include long-term monitoring and forecasting, short-term prediction, real-time monitoring and communication with civil authorities and others during a crisis. Other significant activities are post-crisis analysis with scenario formulation to develop strategies to mitigate the impact of future events and preparation of coordinated risk assessments for regions vulnerable to natural hazards.

*Adapted from the Virginia Hazard Mitigation Plan, 2001.*

## APPENDIX B

### VA Agencies and Mitigation

Various state agencies have natural hazard mitigation roles. These are explored below.

■ **Department of Emergency Management.** VDEM's primary mission is to protect the lives and property of Virginia's citizens from emergencies and disasters by coordinating the state's emergency preparedness, mitigation, response and recovery efforts. It is the responsibility of VDEM to ensure a comprehensive, efficient and effective response to emergencies and disasters throughout Virginia, including provision of assistance in the absence of events for which federal aid is made available. VDEM is charged with supporting mitigation planning and administers the Hazard Mitigation Grant Program that provides grants to eligible entities to implement cost effective mitigation projects in the post-disaster period. VDEM and the Department of Conservation & Recreation coordinate the administration of FEMA's NFIP-funded Flood Mitigation Assistance Program. VDEM also leads the state and federal Public Assistance Programs, which provide disaster assistance to state agencies, local jurisdictions, and certain private nonprofit entities to repair and restore damaged facilities. Damaged facilities must be repaired in a manner that is compliant with existing codes and standards. VDEM manages the National Weather Service's Integrated Flood Observing and Warning System (IFLOWS) in several western and southwestern counties. IFLOWS improves local flash flood warnings through a linked wide area monitoring and communications network. With other state agencies and local jurisdictions, VDEM coordinates hurricane evacuations, relying in part on information developed as part of the Hurricane Evacuation Study prepared by the U.S. Army Corps of Engineers with support from FEMA, VDEM, and the National Weather Service (VDEM, 1992).

■ **Department of Conservation & Recreation.** DCR enhances natural and recreational resources through land management planning, funding, education and regulations. DCR is the State Coordinating Office for the National Flood Insurance Program, administers the dam safety program, and participates in interagency initiatives concerning coastal erosion. A number of DCR's programs have the potential to support certain flood mitigation projects: the Flood Prevention and Protection Assistance Fund helps local jurisdictions address problem areas.

Some easement and other programs may support floodplain acquisition projects, including the Scenic Rivers Program, funding from the Virginia Outdoors Fund, the Conservation Reserve & Enhancement Program, and Best Management Practices implemented with Water Quality Improvement grants.

■ **Department of Housing & Community Development (DHCD).** DHCD collaborates with communities to assist them in fully developing their economic potential, and to create a healthy, safe and affordable living environment. Three key aspects of DHCD's broad responsibilities merit particular attention: Several funding programs can support local mitigation measures, including the Community Development Block Grant program and other federally funded programs; the State Building Code Official provides technical assistance and interpretation to local governments; and after catastrophic disasters of regional proportions, DHCD coordinates the Long-Term Disaster Recovery Task Force.

■ **Department of Forestry (DOF).** Virginia's program, one of the strongest in the nation, is responsible for 15 million acres of forestland, providing protection and management for forest fire, insects, and disease. DOF is directly responsible for suppression of forest fires and supports response to natural disasters. Full-time and part-time wildland firefighters are trained and qualified by DOF in fire control tactics and the Incident Command System. An emergency interagency response center is located in Charlottesville; two mobile command centers are available for rapid deployment. Funded by National Fire Plan grants, DOF has initiated statewide wildland fire risk assessments that will be maintained in a geographic information database system.

Virginia Hazard Mitigation Plan (July 2001)

■ **Department of Mines, Minerals & Energy (DMME).** The DMME operates six divisions, which focus on the production of more than 30 different mineral resources such as coal, gas and oil, and non-petroleum minerals like rock and gravel. A primary goal of DMME is that these mining operations have no off-site effects such as increased flood hazards and slope failure potential. The State Geologist's office provides mapping and digital data to local jurisdictions to be included in local plans. Maps of steep slope areas, including areas where landslides have occurred, are available for some areas.

■ **Department of Environmental Quality (DEQ).** As the lead agency for the Virginia Drought Monitoring Task Force, DEQ compiles Drought Status Reports using information from several state and federal agencies. The reports, which are distributed by VDEM, contain sections

relating to current climatological conditions and situation reports regarding water supplies, water quality, forest fire risks and agriculture and crop reports.

The table below highlights various state agencies and their mitigation roles.

MITIGATION FUNCTIONS	Agriculture & Consumer Services	Business Assistance	Charitable Day Local Assistance	Commission on Local Government	Conservation & Recreation	Economic Development Partnership	Emergency Management	Environmental Quality	Forestry	Game & Inland Fish	General Services	Geographic Information Network	Health	Historic Resources	Housing & Community Development	Housing Development Authority	Labor & Industry	Marine Resources Commission	Mines Minerals & Energy	Planning & Budget	Rail & Public Transportation	Tenants' Rights	Treasury, Risk Management	VA Resource Authority	VA Municipal League/Assoc. of Counties	Local Jurisdictions	Planning District Commissions
<b>INFLUENCE NEW PRIVATE DEVELOPMENT</b>																											
Planning (e.g., land use, comprehensive, etc.)				*					*									*	*			*			*	*	*
Regulations (e.g., permits, codes, standards)								*					*	*	*			*			*		*		*	*	*
Funding (e.g., for public infrastructure, housing)							*					*	*	*		*							*		*	*	*
<b>INFLUENCE PUBLIC BUILDINGS, PUBLIC INFRASTRUCTURE</b>																											
Standards for planning & construction of buildings										*				*			*								*	*	*
Loss control/insurance on buildings		*																*					*		*	*	*
Standards for planning & construction of roads				*														*			*				*	*	*
Standards for planning & construction of infrastructure				*		*		*				*	*	*		*		*		*		*		*	*	*	*
<b>INFLUENCE EXISTING DEVELOPMENT, REDEVELOPMENT, POST-DISASTER RECOVERY</b>																											
Regulations (e.g., codes for existing building)							*		*		*	*	*	*	*	*	*								*	*	*
Planning (e.g., planning & project grants)				*		*		*	*	*	*	*	*	*	*	*	*								*	*	*
Funding/Incentives (e.g., tax, subsidies, grants, loans)	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Technical assistance	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
<b>PUBLIC INFORMATION</b>																											
Information (e.g., outreach, awareness)	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

Source: Virginia Hazard Mitigation Plan (July 2001)  
Mitigation Authority of Local Jurisdictions

Lastly, the State of Virginia enables local jurisdictions to mitigate disasters in a variety of ways. These authorities and roles are delineated in table form below (from Virginia Hazard Mitigation Plan, July 2001.)

Organization	Local Jurisdictions, Authorities and Mitigation Roles
Authorities	<p>The Virginia Constitution sets forth the definition and organization of local governments, and explicitly restricts local span of authority to those powers that may be provided by the General Assembly through general law or special act (known as the 'Dillon Rule').</p> <p>A local jurisdiction in Virginia may be a city, county, town, or regional government. Virginia vests the majority of its planning functions and regulatory controls at the local level. The state has no state planning agency <i>per se</i>, although some agencies hold some planning-oriented duties (APA). Regional planning bodies, authorized by the 'Regional Cooperation Act' provide wide-ranging support to local jurisdictions. Special purpose commissions are authorized, typically focused both topically and regionally.</p>
Existing Programs & Mitigation Role	<p>With respect to addressing natural hazards, local jurisdictions control local planning and development through plans, ordinances, and codes. Response to natural hazard events is coordinated through local emergency management agencies. Recovery, especially from major events, may involve other local agencies, such as housing, water/wastewater, parks and recreation, and others. With the advent of grant funds to support hazard mitigation projects, local agencies and planning district commissions may develop projects, prepare grant applications, and implement projects.</p> <p>Local planning commissions are appointed by the governing bodies. Administrative duties include: supervising and regulating the affairs, investigations, and hearings of the commission; supervising its fiscal affairs; submitting an annual report and budget to the governing body; preparing ordinances and reports; and, if deemed advisable, establishing advisory committees.</p> <p><u>Comprehensive Plans</u> are prepared by planning commissions, and address the physical development of the land within a jurisdiction's territory. Comprehensive studies are made of existing conditions, growth trends, and probably future requirements. Plans are accompanied by maps and charts, and include long-range recommendations for general development. Most plans include designations of areas for various uses, such as residential, business, industrial, agricultural, conservation, recreation, public lands, floodplain, transportation facilities, community services, historical and urban renewal areas, groundwater protection, and areas for affordable housing. Plans are accompanied by official maps, a capital improvements program, a subdivision ordinance, zoning ordinance, and zoning district or area designation maps.</p>

**Zoning**, a means to classify lands into districts, may be adopted by local jurisdictions. Zoning ordinances are for the general purpose of promoting the health, safety or general welfare of the public. Within each district, regulations and the building code may address: land use; buildings and structures; the size, height, area, bulk, location, erection, construction, reconstruction, alteration, repair, maintenance, razing or removal of structures; areas and dimensions of land, water and air space, including open spaces; and the excavation or mining of soil and other natural resources.

**Land Subdivision and Development**, through ordinances, are prescribed by statute. In addition to minimum requirements for plats, utilities, and streets, ordinances must address flood control, drainage, and light and air.

**The Virginia Building Code**, established by the state, must be adopted and administered by each local jurisdiction. Amendments to the code are not allowed, whether to weaken a provision or, due to special local circumstances, to strengthen a provision. The Statewide Building Code, which is coordinated through the Virginia Department of Housing and Community Development, includes provisions related to wind hazards, snow loads, seismic risk, and flood hazards.

**Floodplain Management**, in addition to the provisions of the building code, typically is addressed in a stand-alone ordinance adopted for participation in the National Flood Insurance Program. As of September 2000, 265 jurisdictions are listed by FEMA as participating in the NFIP. Sixteen jurisdictions that have some degree of flood risk identified on a map are not participating (3 have been suspended and one has withdrawn). Citizens within those 16 jurisdictions are not able to purchase federal flood insurance and certain disaster assistance may be withheld by FEMA.

**Emergency Management** functions of local jurisdictions are coordinated through the Virginia Department of Emergency Management. Most local agencies are responsible for preparing for and training to respond to disasters, whether natural or technological in origin. After disasters, emergency management agencies participate in field inspections, documentation of damage, estimating the costs of repair, processing worksheets for disaster assistance, and reporting on recovery.

Virginia Constitution, Article VII, Local Government, online @ <http://legis.state.va.us/vaonline/li1.htm>

Code of Virginia, Title 15.3, online @ <http://leg1.state.va.us/cgi-bin/legp504.exe?000+cod+TOC1502000>

*Source: American Planning Association, Growing Smart(sm). Statutory Summary for the State of Virginia. Updated 5/96. Available online at [www.planning.org/plnginfo/GROWSMAR/summary/virginia.pdf](http://www.planning.org/plnginfo/GROWSMAR/summary/virginia.pdf)*



## Appendix C

### Geologic Map of the New River Valley (Courtesy of Montgomery County Planning)

